UMTRA Ground Water Project

FACT SHEET

U.S. Department of Energy
Grand Junction Office

Uranium Mill Tailings Remedial Action (UMTRA) Ground Water Project at Green River, Utah

This fact sheet provides information about the UMTRA Ground Water Project site located at Green River, Utah. The U.S. Department of Energy Grand Junction Office in Grand Junction, Colorado, manages the UMTRA Ground Water Project.

Site Description and History

The Green River UMTRA Project Site is a former uranium ore-processing facility approximately 1.5 miles southeast of the city of Green River, in Grand County, Utah (Figure 1). The site is immediately south of Browns Wash and approximately 0.5 mile east of the Green River. The site is bounded on the north by the Burlington Northern Santa Fe Railroad right-of-way, U.S. Army, and private properties; on the south by U.S. Army property; and on the east and west by UMETCO Minerals property (Figure 2). The U.S. Army property is part of the Utah Launch Complex of the White Sands Missile Range.

The uranium mill at the Green River site was constructed in 1957; Union Carbide Corporation operated the mill from March 1958 through January 1961. The mill upgraded uranium ore from the Temple Mountain mining district area approximately 40 road miles southwest of the site. During its 3 years of operation, the mill processed 183,000 tons of ore and generated an estimated 137,000 tons of tailings. The upgraded ore concentrate was shipped by rail to Rifle, Colorado, for further processing. Union Carbide later leased the site to a company under contract with the U.S. Department of Defense, and the mill buildings were used for missile tests and assembly. Union Carbide owned the millsite until the State of Utah acquired ownership of the site in 1988; DOE owns the disposal cell area.

From November 1988 through September 1989, the U.S. Department of Energy (DOE) stabilized the abandoned uranium mill tailings and all residual radioactive material in a disposal cell southeast of the mill buildings. The disposal cell covers approximately 6 acres. The area of the former tailings pile and all areas disturbed at the site during the remedial action were backfilled, graded to promote surface drainage, and revegetated.

The former processing site area is not in use at this time. Several of the mill buildings were cleaned up but are currently abandoned and in a state of disrepair. Any future land use plans for the former millsite area will be discussed with state and local governments and the community.

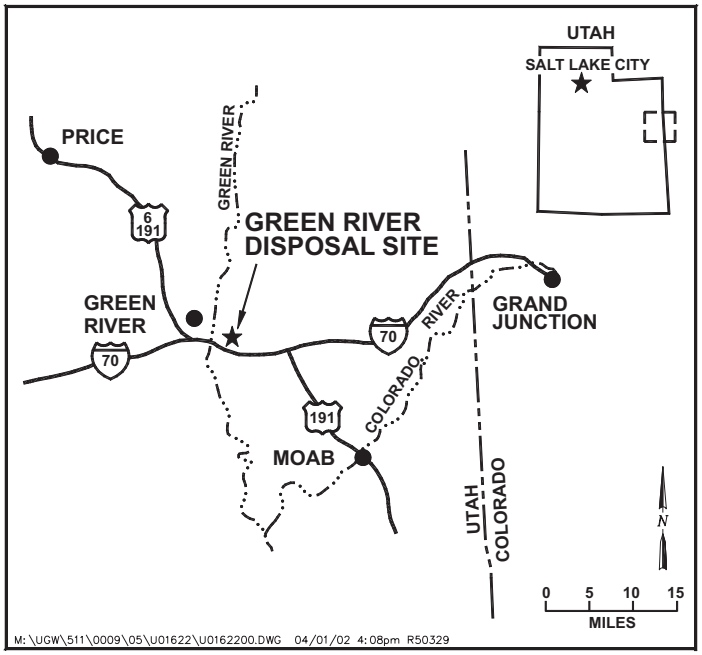

Figure 1. Location of Green River UMTRA Ground Water Project Site

According to federal regulations established in the Uranium Mill Tailings Radiation Control Act (42 *United States Code* 7901 *et seq.*) and the U.S. Environmental Protection Agency (EPA) standard set forth in Title 40, *Code of Federal Regulations,* Part 192, ground water in the uppermost aquifer at the respective sites must be cleaned up to the applicable standards. Ground water in the area of the Green River site is not a current source of drinking water because of the availability of good quality water from the Green River municipal water supply system or the Green River. City residences are connected to the municipal water system. There are no known current uses of surface water or ground water along Browns Wash that is located north of the Green River site and discharges to the Green River.

Ground water beneath the Green River site in the uppermost aquifer has been contaminated by uranium processing activities. Constituents of potential concern include arsenic, nitrate, selenium, sodium, sulfate, and uranium. The uppermost aquifers are the Browns Wash alluvium north and west of the site and the middle sandstone unit of the Cedar Mountain Formation beneath and downgradient from the site.

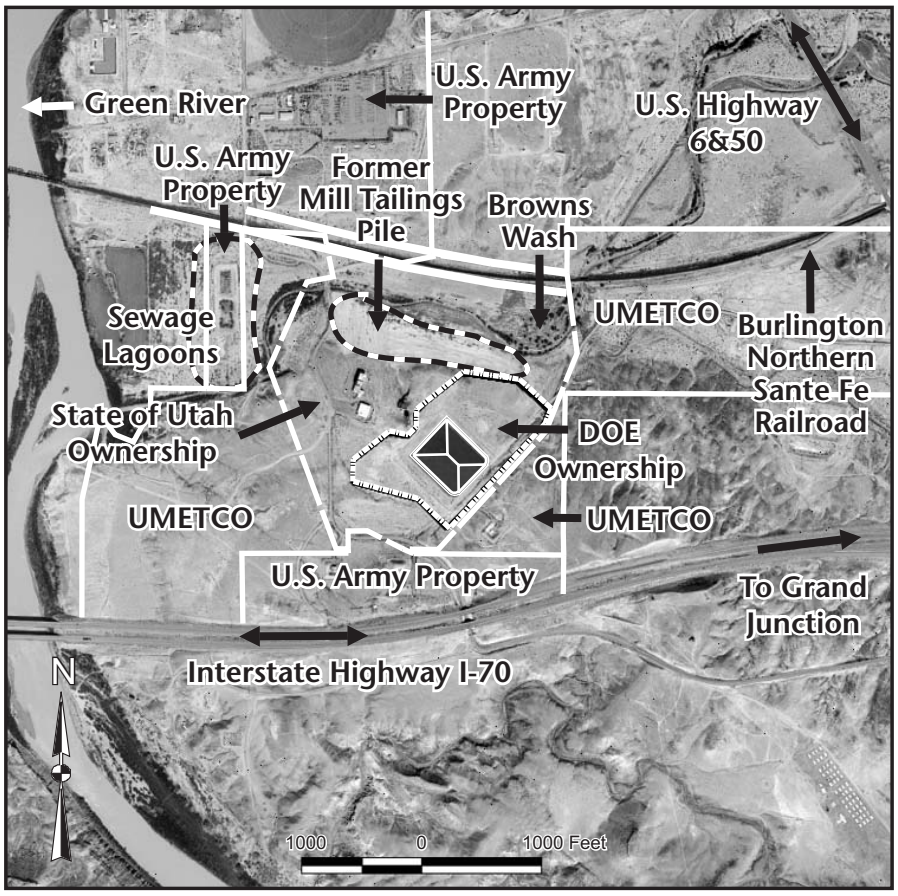

Figure 2. Property Owners in Vicinity of Green River UMTRA Ground Water Project Site

Alluvium is a general term for clay, silt, sand, gravel, or similar unconsolidated material that has been deposited during comparatively recent geologic time by a stream or other body of running water. Constituents related to uranium ore processing were introduced directly into alluvial sediments and ground water adjacent to Browns Wash, and the contaminant plume subsequently has migrated toward the Green River.

The Cedar Mountain Formation is a complex formation of interbedded sandstone, siltstone, claystone, shale, and limestone. The ground water flow system in the Cedar Mountain Formation is not well-defined. Constituents were most likely introduced into ground water in the bedrock aquifer by infiltration through transmissive or fractured units during and after milling operations, during disposal cell construction and cleanup activities, and possibly by transient drainage from the completed disposal cell.

Targeted Compliance Strategy

The targeted compliance strategy for the uppermost aquifer at the Green River site is no ground water remediation with application of alternate concentration limits for contaminants of potential concern that exceed maximum concentration limits or other applicable benchmarks in ground water in the Cedar Mountain Formation and application of a supplemental standard based on limited yield for ground water contaminants in the Browns Wash alluvium.

In accordance with EPA regulations, an alternate concentration limit may be applied after considering options to achieve background levels and maximum concentration limits. In this case, it is unlikely that a maximum concentration limit or background level of the constituent can be reached because of the presence of the disposal cell on site. Furthermore, an alternate concentration limit may be applied to a hazardous constituent if it does not pose a substantial present or future risk to human health and the environment, as long as the limit is not exceeded.

In establishing an alternate concentration limit, two locations must be defined: the point of compliance and the point of exposure. The point of compliance is defined as the site-specific location in the uppermost aquifer where the ground water protection standards must be met. In contrast, the point of exposure is defined as the location where humans, wildlife, or other environmental species could reasonably be exposed to hazardous constituents in the ground water.

Because DOE owns the disposal cell site and the State of Utah owns the land surrounding the site, an appropriate point of exposure would be at the downgradient extent of state-owned land. Ground water samples collected from a well installed at this location will be analyzed to ensure that no site-related contamination migrates beyond the state property line. The concentration limits must be protective of human health and the environment at the point of exposure.

The supplemental standard for the Browns Wash alluvium is based on limited yield (less than 150 gallons per day) as demonstrated by observations of ground water availability during recent field investigations. Surface water in the lower reach of Browns Wash will be sampled to ensure that there is no adverse impact from contaminated alluvial ground water.

The compliance strategy will be implemented in conjunction with institutional controls, if necessary, to provide adequate control of nearby land use and ground water withdrawals. Ground water samples from

the monitoring network will be analyzed to determine the effectiveness of the compliance strategy.

Institutional Controls

Institutional controls are needed in situations where cleanup does not result in unrestricted use and unlimited exposure to ground water at a site. Because active remediation of ground water at the Green River site is not warranted, institutional controls may be needed to protect human health and the environment. DOE owns the disposal site and will maintain control over this property in perpetuity. The State of Utah currently owns the remainder of the former processing site and, consequently, can maintain an effective institutional control in this area. If the State of Utah decides to dispose of the property in the future, an appropriate type of institutional control, such as a deed restriction, will be put in place to prevent exposure to or use of contaminated ground water.

Any necessary controls would be selected using input from the landowners, in conjunction with local, state, and Federal Government agencies. Any final institutional controls selected for Green River would require approval by the U.S. Nuclear Regulatory Commission.

Long-Term Surveillance and Maintenance

Once the compliance strategy has been finalized, it is the responsibility of DOE to ensure that the selected compliance strategy continues to be protective of human health and the environment. Ground water sites become part of the Long-Term Surveillance and Maintenance (LTSM) Program administered by the DOE Grand Junction Office. The LTSM Program manages the site according to a Long-Term Surveillance Plan prepared specifically for the Green River site; activities will include ground water monitoring.

Documents Available

Instructions are available on the DOE Grand Junction Office Internet website at http://www.gjo.doe.gov/ugw to order a copy of the *Baseline Risk Assessment* for the Green River, Utah, site.

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